

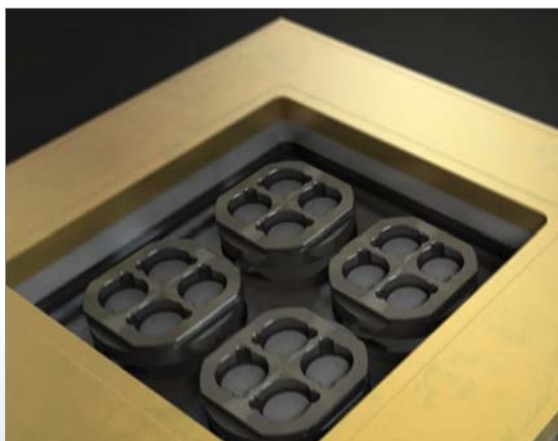
High Sample Throughput of the LFA 467 *HyperFlash* – The Most Versatile Unit of Its Kind

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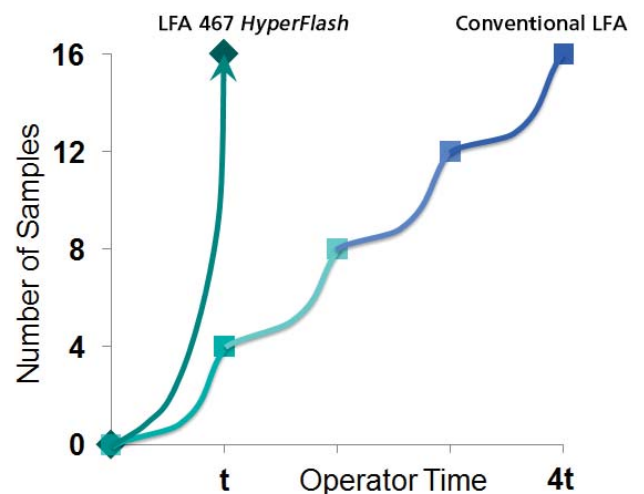
The design of new materials is a challenge for many scientists, as is the refinement of existing materials for the optimization of specific properties. These challenges cannot be met unless one is accurately informed about two fundamental thermal properties: thermal diffusivity and thermal conductivity. One precise, reliable and elegant measurement solution is the Flash Method. It allows for the characterization of low- and high-conductivity materials from cryogenic to elevated temperatures. It has been proven as a reliable, non-contact and direct measurement method in many application areas including polymers, metals and refractories. Meanwhile, the demand for high sample throughput has become increasingly important.

High Sample Throughput of the LFA 467 *HyperFlash*

The LFA 467 *HyperFlash* by NETZSCH is able to measure 16 samples within one turn (same heating rate). The sample changer for up to 16 samples is presented in figure 1.



1 Sample Changer for up to 16 samples



2 Total measurement time for 16 samples using the LFA 467 *HyperFlash* and a conventional LFA system for 4 samples

The total measurement time is drastically reduced due to the fact that the heating and cooling processes can be carried out for all samples at the same time.

Figure 2 compares the measurement time of the LFA 467 *HyperFlash* and to that of an LFA which can only handle up to 4 samples. The higher sample throughput of the LFA 467 *HyperFlash* can be clearly seen.

In addition, it is easy to program the LFA 467 *HyperFlash* for overnight measurements. The unit can be operated for many hours without user intervention thanks to the automatic parameter optimization.

APPLICATION NOTE High Sample Throughput of the LFA 467 *HyperFlash*

In figure 3, an example for the high sample throughput and accuracy of the LFA 467 *HyperFlash* is displayed. Sixteen Pyroceram samples (2.5 mm thick, 12.7 mm in diameter) were measured here in one run from room temperature to 500°C. Evaluation of the thermal diffusivity shows a maximum deviation from literature data of only $\pm 2\%$.

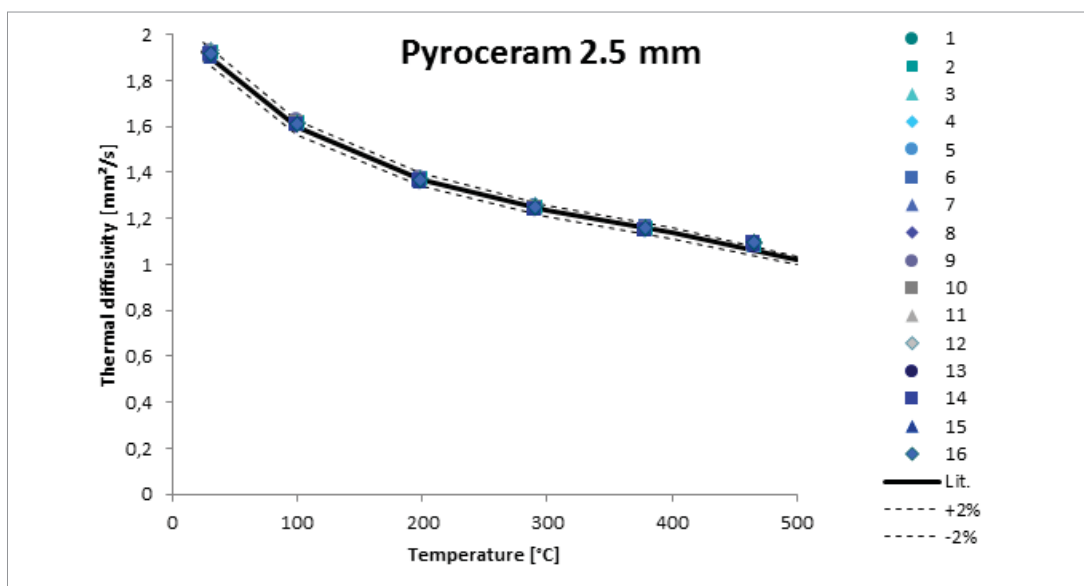
Cooling Systems

Liquid nitrogen devices additionally improve the sample throughput by achieving rapid cooling times. Such devices allow for measuring temperatures as low as -100°C . The available cooling systems for the furnace and the infrared

detector can optionally be equipped with liquid nitrogen refill systems to guarantee long measurement times without interruption.

Conclusion

The LFA 467 *HyperFlash* offers high sample throughput, due to the fast furnace control and the automatic sample changer for up to 16 samples. Precise results can be achieved, irrespective of the sample position within the tray and without operator intervention, making this LFA an optimum tool in quality control as well as in research and development.



3 16 Pyroceram samples (diameter of 12.7 mm and thickness of 2.5 mm) measured with the LFA 467 *HyperFlash* at the same heating